

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

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U. S. DISTRICT COURT
EASTERN MICHIGAN

PATENT HOLDING COMPANY,

Plaintiff,

v.

Case No. 99-76013

DELPHI AUTOMOTIVE SYSTEMS
CORPORATION,

HONORABLE AVERN COHN

Defendant.

_____ /

MEMORANDUM AND ORDER ON CLAIM CONSTRUCTION

Table of Contents

I. Introduction	1
II. Legal Standards	2
A. Standard of Review	2
B. Claim Interpretation	3
III. The '485 Patent: The Snap-On Patent	6
A. The '485 Patent Generally	6
B. Analysis	9
1. "Connector"	9
2. "Groove"	11
3. "Receive"	15
4. "Engage"	18
5. "Engagement Member"	23
6. "Engagement"	23
IV. The '026 Patent: The Tear Seam Patent	24
A. The '026 Patent Generally	24
B. Analysis	26
1. "Break Seam"	26
2. "Defining" and "Defined"	30
3. "Break Pattern"	33
4. "First Convex Wall" and "Second Convex Wall"	36
5. "Break Wall"	40

V. The '031 Patent: The Horn Switch Patent	41
A. The '031 Patent Generally	41
B. Analysis	44
1. Prosecution History of the '031 Patent	44
2. "Disposed In"	45
3. "Flexible Diaphragm"	47
VI. Conclusion	49

I. Introduction

This is a patent case. Plaintiff Patent Holding Company (PHC), holder of U.S. Patent No. 5,501,485 (the '485 patent), U.S. Patent No. 5,498,026 (the '026 patent), and U.S. Patent Re. 35,031 (the '031 patent), is suing defendant Delphi Automotive Systems Corporation (Delphi) for infringement in the making, etc. of air bag covers which fall within the scope of one or more of the claims of the three patents. At this time the sole claims in issue are claim 11 of the '485 patent, claim 1 of the '026 patent, and claim 6 of the '031 patent.¹ The Court previously interpreted four ambiguous terms in the three patents.² Before the Court are the parties' papers relating to interpretation of the remaining ambiguous terms. The papers were referred to a Special Master,³ who issued a Report and Recommendation for each of the three patents. The Court conducted a hearing on the parties' objections on July 21, 2004 and issued a Decision on Claim Construction on August 2, 2004. This memorandum details the reasons and analysis for each interpretation.⁴

¹See Patent Holding Company's Amended Designation of Paradigm Claims (March 27, 2003).

²See First Decision on Claim Construction: U.S. Patent No. 5,501,485 (Dec. 5, 2003) (interpreting "cover," "panel," "segment," and "homogenous thermoplastic molded body").

³See Appointment and Order of Reference to Special Master (Nov. 21, 2003); Order Amending Order of Reference to Special Master (Dec. 8, 2003).

⁴The respective positions of the parties on the ambiguous terms in the three patents, along with the Special Master's recommended interpretations and the Court's interpretations, are displayed in Exhibits A, B, and C.

II. Legal Standards

The following legal standards apply to the analysis for all three patents.

A. Standard of Review

The Appointment and Order of Reference to Special Master of November 21, 2003 stated that “[r]eview of the recommendation of the Special Master by the Court shall be governed by 28 U.S.C. § 636(b)(1)(B) and (C),” which provide:

Within ten days after being served with a copy, any party may serve and file written objections to such proposed findings and recommendations as provided by rules of court. A judge of the court shall make a **de novo determination of those portions of the report or specified proposed findings or recommendations to which objection is made.** A judge of the court may accept, reject, or modify, in whole or in part, the findings or recommendations made by the magistrate judge. The judge may also receive further evidence or recommit the matter to the magistrate judge with instructions.

The Special Master issued a Report and Recommendation for each of the three patents⁵ and both parties filed objections.⁶ Where either PHC or Delphi object to the Special Master’s recommended interpretation, the Court must evaluate the parties’ arguments de novo. Where neither party objects to the Special Master’s recommended interpretation, the interpretation will be adopted by the Court.

⁵The Special Master’s well reasoned and focused reports have been very helpful to the Court.

⁶The objections filed by the parties largely repeated their previous arguments made in the original Markman briefing rather than responding specifically to the Special Master’s recommendations. This is unfortunate and is illustrative of the excessiveness demonstrated by the parties’ papers and their efforts to look to extrinsic evidence without justifying the need to do so. Also, the parties’ efforts to incorporate the accused air bag covers in this Markman proceeding are not appreciated.

B. Claim Interpretation

Claim interpretation is a matter of law for the Court. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996). The focus is on "what one of ordinary skill in the art at the time of the invention would have understood the term to mean." Id. at 986. The first step in construing a patent claim is to examine the intrinsic evidence:

First, we look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention. Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history.

Thus, second, it is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication. . . . The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.

Third, the court may also consider the prosecution history of the patent, if in evidence. This history contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims. As such, the record before the Patent and Trademark Office is often of critical significance in determining the meaning of the claims. Included within an analysis of the file history may be an examination of the prior art cited therein.

Vitronics Corp. v. Conceptoronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996) (citations omitted).

There is a “heavy presumption’ that claim terms carry their ordinary meaning as viewed by one of ordinary skill in the art.” Altiris, Inc. v. Symantec Corp., 318 F.3d 1363, 1369 (Fed. Cir. 2003). Dictionaries, encyclopedias, and treatises, which were publicly available at the time the patent was issued, are relevant sources for ascertaining how a person of skill in the art would understand the meaning of a claim. Id.; Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202-03 (Fed. Cir. 2002); see also Vanderlande Indus. Nederland BV v. ITC, 366 F.3d 1311, 1321 (Fed. Cir. 2004) (cautioning that technical dictionaries, not non-scientific general-usage dictionaries, should be used when “artisans would attach a special meaning to a claim term, or . . . would attach no meaning at all to that claim term (independent of the specification)”). However, the abstract definition of an individual term does not always reflect its ordinary meaning; claim terms must always be read in the context of the surrounding claim language. Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc., 334 F.3d 1294, 1299-1300 (Fed. Cir. 2003). Further, when a term has multiple dictionary definitions, “the intrinsic record must always be consulted to identify which of the different possible dictionary meanings is most consistent with the use of the words by the inventor.” Id. at 1300; Renishaw PLC v. Marposs Societa’ per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998). “If more than one dictionary definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all consistent meanings.” Brookhill-Wilk, 334 F.3d at 1300.

Because of the presumption, a claim term must be given its ordinary meaning unless the patentee acted as his own lexicographer and redefined the term in the specification, Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed. Cir. 2001), or

characterized “the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope,” Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1327 (Fed. Cir. 2002).

Claim terms must also be “construed consistently with [their] appearance in other places in the same claim or in other claims of the same patent.” Rexnord, 274 F.3d at 1342. Additionally, the doctrine of claim differentiation holds that “two claims of a patent are presumptively of different scope.” Kraft Foods, Inc. v. International Trading Co., 203 F.3d 1362, 1366 (Fed. Cir. 2000).

There is presumed to be a difference in meaning and scope when different words or phrases are used in separate claims. To the extent that the absence of such difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between claims is significant. Where some claims are broad and others narrow, the narrow claim limitations cannot be read into the broad whether to avoid invalidity or to escape infringement.

United States v. Teletronics, Inc., 857 F.2d 778, 783-84 (Fed. Cir. 1988) (citations and quotation marks omitted). Claim differentiation, however, cannot be used to broaden a claim beyond its proper scope. Multiform Desiccants Inc. v. Medzam, Ltd., 133 F.3d 1473, 1480 (Fed. Cir. 1998).

If the meaning of a claim term can be determined from the intrinsic evidence alone, it is improper to review extrinsic evidence. Bell Atlantic Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1268-69 (Fed. Cir. 2001).

“However, in the rare circumstance that the court is unable to determine the meaning of the asserted claims after assessing the intrinsic evidence, it may look to additional evidence that is extrinsic to the complete document record to help resolve any lack of clarity.” Id. at 1269. Extrinsic evidence includes “expert testimony, articles, and

inventor testimony." Id. While extrinsic evidence may also be used to aid in comprehension of the relevant technology, it may never be used to expand or limit claim language as it is defined, even by implication, in the specification or prosecution history. Id.; Altiris, 318 F.3d at 1369; Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1308 (Fed. Cir. 1999).⁷

III. The '485 Patent: The Snap-On Patent

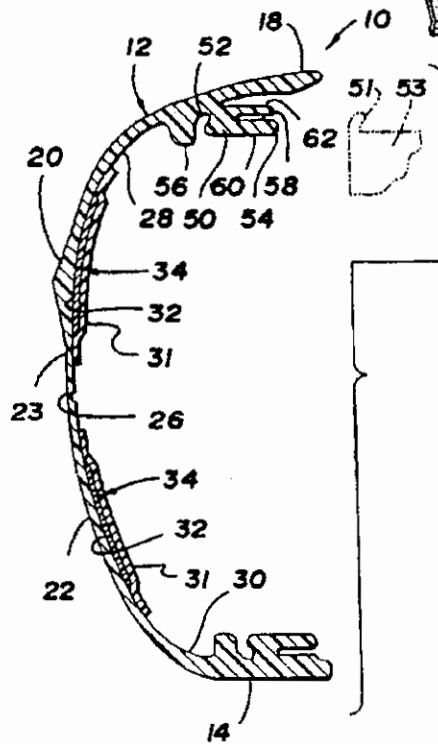
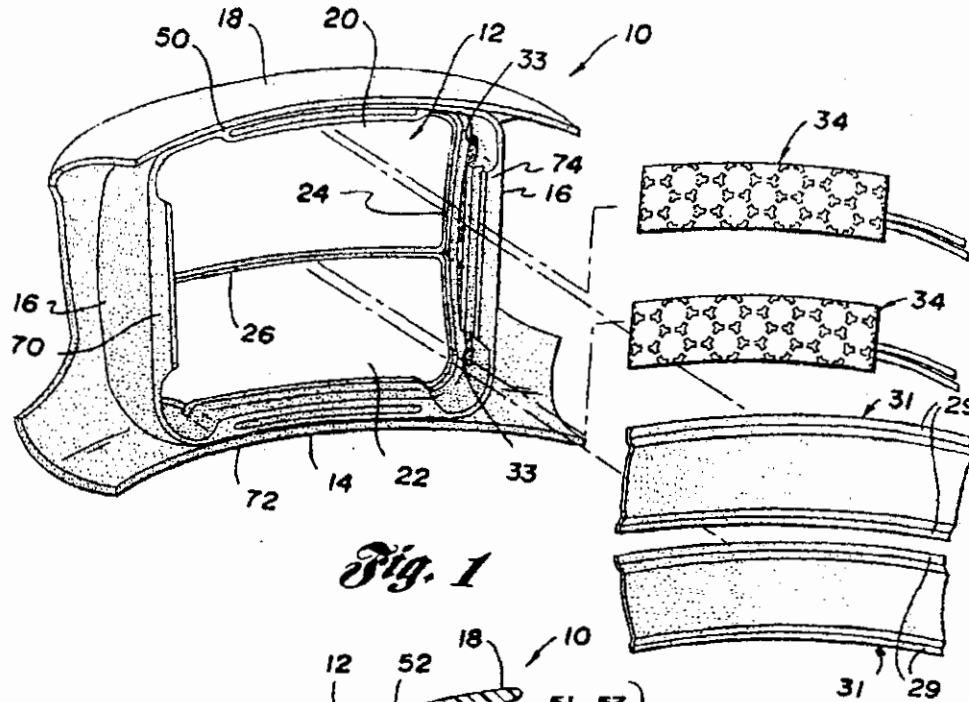
A. The '485 Patent Generally

The ABSTRACT describes the invention of the '485 patent as follows:

A snap-on air bag cover for use with an uninflated air bag container including a retaining member, the snap-on air bag cover comprising, a plastic front cover adapted to directly enclose the uninflated air bag container, a pair of plastic side panels connected to opposite sides of the front cover, a resilient clip member extending from each of the side panels, the clip member having an extending snap-on groove defined therein adapted to cooperate with the retaining member for affixing the air bag cover to the air bag container, wherein the pair of side panels are connected to the front cover such that the side panels and resilient clip members are permitted to pivotably travel away from each other in opposite directions allowing the retaining member to enter and abuttingly engage the snap-on groove thereby retaining the air bag cover on the air bag container.

⁷See Order, Apotex, Inc. v. Eon Labs Mfg., Inc., Case No. 01-0482 (E.D.N.Y. June 28, 2004) (directing the parties to first file papers setting forth the ordinary and customary meaning of the disputed terms and then file papers stating whether the intrinsic record rebuts the ordinary and customary meanings according to the Federal Circuit's direction in Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193 (2002)).

Figures 1 and 2 illustrate the invention:



The BACKGROUND ART generally describes the advance in the art as follows:

Presently, when air bag covers are provided in automobiles on the drivers side of the vehicle, the air bag is stored in the steering column behind an air bag cover. During automatic inflation of the air bag, the air bag cover moves away from the steering column to permit its safety function between the steering column and the operator of the vehicle.

Recent practice in the automotive industry is utilization of all plastic fabricated air bag covers. Conventional air bag covers used in conjunction with occupant restraint systems often include various connection systems for attaching the air bag cover to the uninflated air bag container. As those skilled in the art will recognize, such systems normally include a two piece cover construction wherein a first cover portion, usually manufactured from a relatively stiff material, is initially disposed directly over the uninflated air bag container. A second more resilient cover portion is next affixed over the first cover portion and used as the outer decorative cover.

Claim 11 of the '485 patent (broken down into appropriate clauses) reads:

11. An improved air bag cover of the type adapted to snap onto the retaining rim of an air bag container, the cover comprising a homogenous thermoplastic molded body including a separable front cover panel from which project toward the container a plurality of transverse panels, each of the transverse panels being flexural relative to the front panel, the improvement characterized in that:

a plurality of the transverse panels are formed with a connector for a snap-on engagement with the container rim, each connector comprising,

a snap-on groove extending along a segment of the transverse panel, the groove having a cross-sectional shape adapted to receive and engage the container rim, and

an engagement member positioned ahead of the snap-on groove for guiding the container rim into engagement with the snap-on groove during flexural displacement of the traverse panel.

The underlined words require interpretation by the Court. The six terms in claim 11 to be construed are:

- (1) "connector,"
- (2) "groove,"
- (3) "receive,"
- (4) "engage,"
- (5) "engagement member," and
- (6) "engagement."

B. Analysis

1. "Connector"

Claim 11 recites that "a plurality of the transverse panels are formed with a connector for a snap-on engagement with the container rim."

PHC says that "connector" means "a feature of the airbag cover that connects the cover to an airbag container." Delphi says that the term means "a structural feature formed with a transverse panel which connects the cover to the air bag container." The Special Master recommends that the term be interpreted to mean "a feature that connects."

Clearly, the term "connector" ordinarily means something that connects, see Webster's Third New International Dictionary 481 (1993) [hereinafter Webster's Third] ("something that connects"); Random House Dictionary of the English Language 432 (2d ed. 1987) [hereinafter Random House] ("a person or thing that connects" or "any of various devices for connecting one object to another"), and according to the express language of claim 11, the connector connects the air bag cover to the air bag container rim. Thus, the only real difference between the proffered interpretations is where each

party locates the connector. Delphi's interpretation specifically states that it must be located on the transverse panel, while PHC's interpretation implies that it can be located anywhere on the air bag cover.

As the Special Master correctly recognized, however, the claim language surrounding "connector" already requires that the transverse panel be "formed with a connector for a snap-on engagement with the [air bag] container rim." The specification confirms the location of the connector in relation to the transverse panel. See, e.g., '485 patent, col. 2, ll. 1-5 ("snap-on automotive air bag cover comprises . . . a pair of plastic side panels connected to opposite sides of the front cover [and] a resilient clip member extending from each of the side panels"); id., col. 4, ll. 1-3 ("Referring now to FIG. 2, there is shown a resilient clip connector 50 extending from side panel 18."); id., col. 4, ll. 22-23 ("Referring now to FIG. 1 there is shown four clip connectors 50, 70, 72, and 74 extending from each side panel."); id., col. 4, ll. 39-41 ("The air bag cover 76 includes four clip connectors 86, 88, 90 and 92 connected to respective side panels 94, 96, 98, and 100."). Consequently, it would be redundant to further specify the location of the connector when claim 11 already requires that the transverse panels be "formed with a connector" to connect the air bag cover to the rim of the air bag container. Even if it were necessary to specify the location of the connector, though, Delphi's argument that the connector is "formed with a transverse panel" is incorrect because it reverses the language of the claim, which requires that the transverse panel be "formed with a connector."

The Special Master's recommendation that the connector is a "feature"—not a "feature of the airbag cover" (PHC's interpretation) and not a "structural feature formed

with a transverse panel" (Delphi's interpretation)—is correct. The fact that it does not specify the location of the connector does not make the interpretation misleading in light of the surrounding claim language. The jury will be told that "connector" means:

A feature that connects.

2. "Groove"⁸

Claim 11 requires "a snap-on groove extending along a segment of the transverse panel, the groove having a cross-sectional shape adapted to receive and engage the container rim."

PHC says that "groove" is defined by the function it performs and should be interpreted to mean a "feature of the airbag cover so shaped in cross sectional construction to receive and engage the rim of the airbag container." Delphi says that the term means "a long, narrow channel or furrow." The Special Master recommends that the term be interpreted to mean "a narrow channel."

Delphi submits numerous dictionary definitions of "groove," each of which it says reflects the ordinary meaning of "groove" as a long, narrow channel or furrow. See Random House 842 ("a long, narrow cut or indentation in a surface, as the cut in a board to receive the tongue of another board"); Webster's Third 1001 ("a long narrow hollow or channel made artificially in a surface"). Delphi further submits a similar technical dictionary definition to show that its dictionary definitions are appropriate in the context of mechanical devices. See McGraw-Hill Dictionary of Engineering 234 (1997) ("[DESIGN ENGINEERING] A long, narrow channel in a surface").

⁸The parties have identified "groove," not "snap-on groove," for interpretation.

PHC says that Delphi's dictionary definitions do not apply because the claim itself defines the snap-on groove as anything "having a cross-sectional shape adapted to receive and engage the container rim." According to PHC, "groove" is defined by what it does ("snap-on" and "receive and engage the container rim") rather than what it is, which is a permissible method of claim drafting. See In re Schreiber, 128 F.3d 1473, 1478 (Fed. Cir. 1997) ("A patent applicant is free to recite features of an apparatus either structurally or functionally.").

The functional feature of the snap-on groove apparatus in the context of the air bag cover as a whole is that it receives and engages the air bag container rim. The functional feature, though, does not subsume the apparatus itself. While the groove must have a certain cross-sectional shape to fit with the air bag container rim, it must still be a "groove." Therefore, simply defining "groove" by its shape and function as stated in the claim would be insufficient. Indeed, if "groove" were solely defined by a limitation appearing later in the claim, the term itself would be rendered meaningless. Claim terms are obviously used for a reason making it improper to read out any limitation in a claim. See Ethicon Endo-Surgery, Inc. v. United States Surgical Corp., 93 F.3d 1572, 1582 (Fed. Cir. 1996).

Importantly, although the specification does not specifically refer to the groove as a narrow channel, the two embodiments of the snap-on groove disclosed in the specification are consistent with the term's ordinary meaning and do not demonstrate that the patentee intended to act as his own lexicographer and redefine "groove" contrary to its ordinary meaning. Snap-on groove 52 is shown in Figure 2 and described as follows:

Referring now to FIG. 2, there is shown a resilient clip connector 50 extending from side panel 18. A snap-on groove 52 is shown disposed within clip connector 50. Clip connector 50 is comprised of a front engagement section 54 and a rear shoulder section 56 with snap-on groove 52 disposed between front engagement section 54 and rear shoulder section 56. **Snap-on groove 52 is configured to cooperate with a retaining rim 51 on uninflated air bag container 53 (shown in phantom). For proper connection and retainment, the snap-on groove should have a cross-sectional shape that corresponds to the shape of the air bag container rim.**

'485 patent, col. 4, ll. 1-12 (emphasis added). Likewise, snap-on groove 106 shown in Figure 8 is a space between front engagement section 102 and rear shoulder section 104 where an L-shaped air bag container rim fits. *Id.*, col. 4, ll. 39-52. Further, the term "groove" appears in more than one place in the patent. The specification describes a "biasing groove" with a different function than the snap-on groove. *Id.*, col. 4, ll. 17-21. Hence, the term "groove" in claim 11 cannot be defined functionally.

PHC argues that interpreting "groove" to mean a narrow channel would be impermissibly reading in a limitation from the specification, citing Teleflex, 299 F.3d at 1328 (holding that the district court erred by importing a limitation from the specification into the claim). Each embodiment of the snap-on groove disclosed in the specification is a space between a "front engagement section" and a "rear shoulder section." Claim 11, however, only requires an "engagement member" and lacks a "rear shoulder section" limitation. Therefore, according to PHC, the claim does not have the second portion necessary to form a channel and interpreting "groove" to mean a narrow channel would be reading the claim as the preferred embodiment, not the claimed invention. PHC also argues under the principle of claim differentiation that because claim 2 explicitly requires both a "front engagement section" and "rear shoulder section"

while claim 11 only requires an "engagement member," the term "groove" in claim 11 should not be interpreted to require a rear shoulder section.

Contrary to PHC's assertions, interpreting "groove" to mean a narrow channel does not require grafting a "rear shoulder section" limitation onto claim 11 nor does it violate the principle of claim differentiation. The terms "groove" and "channel" connote a hollow space or opening between two surfaces. Unlike claim 2, which requires that the groove be between a "front engagement section" and "rear shoulder section," claim 11 does not explicitly state what surfaces the groove is disposed between. Therefore, interpreting "groove" to mean a channel merely requires an opening between two surfaces; it does not require the "rear shoulder section" that is present in the preferred embodiments (rear shoulder section 56 in Figure 2 and rear shoulder section 104 in Figure 8). Claim differentiation also does not apply for two reasons. First, claim 2 depends from claim 1, not claim 11. Independent claims 1 and 11 have many different limitations. Claim 2 would not be rendered superfluous if the claim 11 "groove" is interpreted to mean a narrow channel. Second, claim 1 and claim 2 merely provide that a "resilient clip member" has "an extending snap-on groove defined therein" and the "snap-on groove is disposed between said front and rear sections." As the Special Master correctly points out, the rear shoulder section is not a defining structural part of the snap-on groove. "Groove" stands or falls on its own and has nothing to do with a "rear shoulder section."

Finally, the term "groove" in claim 11 is fundamentally different from the claim term "clip" at issue in Teleflex. In that case, the district court interpreted "clip" to mean "a single pair of legs" performing a dual function as specified in the claim. Id. at 1327.

The Federal Circuit held that although the specification described only one embodiment (having a single pair of legs), the specification and prosecution history did not contain an “expression of manifest exclusion or restriction demonstrating an intent to limit” the invention to a single pair of legs. *Id.* at 1327. Also, the ordinary meaning of the term was broader than the district court’s narrow definition. *Id.* at 1328. Consequently, the court interpreted the term to mean “a structure that provides the dual functions” listed in the claim. *Id.* Here, however, the ordinary meaning of the term “groove” is abundantly clear and would not require importing anything from the specification into the claim. The functional feature of the “groove” (having a shape to receive and engage the air bag container rim) is listed **later in the claim** and is not the definition of “groove” itself.

The Special Master’s recommended interpretation of “a narrow channel” is correct. There is nothing to suggest that a person of ordinary skill in the art would read the term contrary to its ordinary meaning. There is also no need to define the length of the channel as “long” as Delphi suggests because claim 11 already specifies that the groove “extend[s] along a segment of the transverse panel.” The jury will be told that “groove” means:

A narrow channel.

3. “Receive”

Claim 11 provides that the snap-on groove has “a cross-sectional shape adapted to receive and engage the container rim.”

PHC says that “receive” means “take or accept.” Delphi says that the term means “to hold, bear or contain.” The Special Master recommends that “receive” be

interpreted to mean "accept or take in."

Both parties cite dictionary definitions in support of their position. PHC submits "to take back, take, accept, receive." See Webster's Third 1894. Delphi submits "to hold, bear, or contain." See Random House 1610; see also Webster's New World College Dictionary 1195 (4th ed. 1999) [hereinafter Webster's New World] ("to have room for; hold; contain"); Webster's II New Riverside University Dictionary 981 (1988) [hereinafter Webster's II New Riverside] ("To take in or hold").

Because there are multiple dictionary definitions for the term "receive," the specification must be consulted to determine which definition is most consistent with the use of "receive" in claim 11. The specification states that "the snap-on groove should have a cross-sectional shape that corresponds to the shape of the air bag container rim." '485 patent, col. 4, ll. 9-12; id., col. 4, ll. 46-51. The interaction between the snap-on groove and the container rim is generally described as follows:

The snap-on automotive air bag cover comprises . . . a resilient clip member extending from each of the side panels, the clip member having an extending snap-on groove defined therein adapted to cooperate with the retaining member for affixing the air bag cover to the air bag container, wherein the pair of side panels are connected to the front cover such that **the side panels and resilient clip members are permitted to pivotably travel away from each other in opposite directions allowing the retaining member to enter and abuttingly engage the snap-on groove thereby retaining the air bag cover on the air bag container.**

Id., col. 2, ll. 1-14 (emphasis added). In the preferred embodiments, the connector has a biasing groove, which allows the front engagement section to deform when the container rim "is initially engaged with the clip connector just prior to full engagement with the snap-on groove." Id., col. 4, ll. 17-21; id., col. 4, ll. 57-61 ("the inclined surface

112 in cooperation with the biasing groove 114 assist in locating and abuttingly engaging the rim 108 of the air bag container 110 within the snap-on groove 106"). The actual snap-on connection between the air bag cover and the air bag container is also described as follows:

Each clip connector is attached to the respective side panel in a live hinge-like fashion such that **the clip connectors and associated side panels move away from the front cover upon operative insertion of the air bag container rim 108 within snap-on groove 106.**

For example opposing side panels 96 and 100 move away from front cover 82 and also away from each other as the rim 108 is abuttingly engaged against the inclined surfaces 112 of each clip connector 88 and 92. Further the cooperation of the biasing grooves in the other pair of opposing clip connectors 86 and 90 works to assist in locating and operatively connecting the air bag container 110 to the air bag cover 76.

Id., col. 5, ll. 33-45 (emphasis added). Thus, when the air bag cover snaps on to the air bag container, the transverse panel flexes allowing the container rim to enter and abuttingly engage the snap-on groove, which has a shape that corresponds with the container rim.

PHC says that its interpretation of "take or accept" conforms with the specification's disclosure that the air bag cover is designed to allow the container rim to "enter" the snap-on groove when the transverse panel flexes. Delphi, however, says that "take or accept" only applies in the context of receiving things like mail or visitors. Delphi says that its interpretation of "to hold, bear or contain" is more appropriate in the context of a mechanical structure. See Random House 1610 (giving two example phrases: "[t]he nut receives a bolt and a washer" and "[t]he plaster receives the impression of the mold"). Delphi emphasizes that the air bag container rim is inserted

within the snap-on groove, not next to it. See '485 patent, col. 5, ll. 33-37. Therefore, the snap-on groove is adapted to hold, bear, or contain the container rim.

Delphi's interpretation of "to hold, bear or contain" is contrary to both the specification and the language of the claim because it implies some degree of retention in the term "receive." Claim 11 clearly separates the two operations of "receive" and "engage"—the snap-on groove must be capable of both receiving **and** engaging the container rim. Likewise, the specification discloses that the container rim both enters **and** abuttingly engages the snap-on groove. Id., Abstract ("enter and abuttingly engage"); id., col. 2, 12-14 ("enter and abuttingly engage"). The level of retention, which the parties dispute, see infra Part III.B.4, is imparted in the term "engage," not "receive." Simply because the container rim is inserted within the snap-on groove does not mean that the insertion operation itself should be characterized as "holding" the container rim. The specification clearly establishes that the container rim enters and goes within the snap-on groove, which is specifically shaped to receive the container rim.

The Special Master's interpretation of "accept or take in" is consistent with the language in the specification stating that the air bag container rim is inserted into and enters the snap-on groove. Therefore, the jury will be told that "receive" means:

Accept or take in.

4. "Engage"

Claim 11 provides that the snap-on groove has "a cross-sectional shape adapted to receive and engage the container rim."

PHC says that "engage" means "contact for the purpose of connecting."⁹ Delphi says that the term means "to attach or secure." The Special Master recommends that "engage" be interpreted to mean "attach or secure."

The parties agree that "engage" implies some degree of retention of the air bag cover on the air bag container. Anticipating infringement issues, though, the parties disagree over the level of such retention. PHC says that it must be less permanent; Delphi says that it must be more permanent. Further complicating the analysis is the difficulty of language in characterizing the retention levels that each party ascribes to the term "engage."

Once again, both parties cite different dictionary definitions of the commonly used term "engage." PHC submits "to come into contact or interlock with." See Webster's Third 751. Delphi submits "to cause (gears or the like) to become interlocked; interlock with" and "to attach or secure." See Random House 644; Webster's II New Riverside 433 ("To interlock or cause to interlock"); see also Oxford English Dictionary (2d ed. 1989), available at OED Online <<http://dictionary.oed.com>> ("To interlock with, fit into a corresponding part.").

Also once again, the specification must be referenced to determine which definition is appropriate. The object of the invention "is to provide a one piece, snap-on air bag cover that is **affixable** directly to an uninflated air bag container." '485 patent, col. 1, ll. 62-64; id., col. 1, ll. 16-18; id., col. 2, ll. 6-8 ("an extending snap-on groove

⁹In its reply brief, PHC proposes an alternative interpretation of "non-permanently snap-on" where "the snapping-on is only that sufficient to prevent easy removal." PHC does not provide any argument regarding this interpretation.

defined therein adapted to cooperate with the retaining member for **affixing** the air bag cover to the air bag container"); id., col. 5, ll. 48-49 ("provide an air bag cover which is directly **affixable** to an air bag container"). At four places in the specification, the container rim is described as entering and "abuttingly engaging" the snap-on groove. Id., Abstract ("allowing the retaining member to enter and **abuttingly engage** the snap-on groove thereby retaining the air bag cover on the air bag container"); id., col. 2, ll. 11-14 (same); id., col. 4, ll. 59-61 ("locating and **abuttingly engaging** the rim 108 of the air bag container 110 within the snap-on groove 106"); id., col. 5, ll. 39-41 ("the rim 108 is **abuttingly engaged** against the inclined surfaces 112 of each clip connector 88 and 92"). Through the snap-on engagement, the air bag cover is "retained" on the air bag container. See id., Abstract, id., col. 2, ll. 11-14; id., col. 4, ll. 7-12 ("Snap-on groove 52 is configured to cooperate with a **retaining** rim 51 on uninflated air bag container 53 (shown in phantom). For proper connection and **retainment**, the snap-on groove should have a cross-sectional shape that corresponds to the shape of the air bag container rim."). Indeed, claim 11 itself calls the rim of the air bag container a "retaining rim." The specification similarly discloses an air bag container with a "retaining member." Id., Abstract; id., col. 2, ll. 5-20.

Delphi says that based on the specification and the language of the claim, the only structure that performs the retention function is the snap-on groove. The container rim goes within the groove, which "attaches or secures" the container rim. Delphi says that the terms "affix" and "retain" as used in the specification are synonymous with "attach" and "secure" and all of the terms appropriately convey the concept of

retention.¹⁰

PHC, by contrast, says that the specification's use of "abuttingly engage" implies a snap-on connection by contact, not a permanent bond. As support, PHC cites portions of the specification using the term "attach" in a more permanent sense. See '485 patent, col. 3, ll. 26-28 ("Preferably, the rear panels 31 are **hot plate welded, heat staked or otherwise attached** to the upper and lower portions 20 and 2 . . ."); id., col. 5, ll. 32-36 ("Each clip connector is **attached** to the respective side panel in a live hinge-like fashion such that the clip connectors and associated side panels move away from the front cover upon operative insertion of the air bag container rim 108 within snap-on groove 106."). PHC says that the air bag cover and air bag container certainly do not need to be integrally molded or welded together like the panels and connectors that are "attached" in the specification. PHC further points out that while the object of the invention as a whole is to "affix" the air bag cover to the air bag container, the specification only discloses that the snap-on groove "abuttingly engages" the container rim. Therefore, requiring "attachment" between the snap-on groove and the container rim would improperly require one element of the invention (the groove) to carry the burden of the invention as a whole (the air bag cover).

¹⁰Roget's International Thesaurus (4th ed. 1977) indexes the term "engage" under the following headings:

affiance, attempt, attract, contract, employ, engross, fight with, induce, interact, involve, occupy, promise

None of the headings seem to apply in the context of a mechanical structure. The term "retain," however, lists "engage 780.13," which lists synonyms for an employment context such as "give a job to" and "sign up for." Again, the thesaurus is not useful because "engage" is used in a mechanical context.

PHC is correct that the terms "affix" and "attach" are too restrictive in light of their use in the specification. However, PHC's vague interpretation of "contact for the purpose of connecting" is also inadequate because it essentially provides no retention at all. As Delphi correctly points out, the only structure in claim 11 that allows the air bag cover to snap on to the container rim, and thereby be retained on the container rim, is the snap-on groove. Thus, the groove must be adapted to do more than merely contact the container rim. Further, retention is accomplished through the specific action of snapping on as recited in claim 11, not by any other means of retention. A person of ordinary skill in the art reading claim 11 in light of the specification would understand the term "engage" (in light of the surrounding language) to mean that the snap-on groove has a cross-sectional shape adapted to secure the air bag cover in place by snapping on to the container rim.¹¹ The Special Master's recommended interpretation of "attach or secure" is incorrect because it encompasses two different levels of retention, one of which ("attach") is too restrictive based on the specification. Further, the Special Master's recommended interpretation does not account for the fact that the snap-on groove engages the container rim in a specific way—by snapping on to the container rim. The concept of snapping on is certainly easy for a jury to understand. The jury will be told that "engage" means:

Secure in place by snapping on.

¹¹There is no claim differentiation problem with this interpretation because none of the claims that depend from claim 11 recite that the snap-on groove engages the container rim by snapping on.

5. "Engagement Member"

Claim 11 requires "an engagement member positioned ahead of the snap-on groove for guiding the container rim into engagement with the snap-on groove during flexural displacement of the transverse panel."

PHC says that "engagement member" means "part of the cover that guides the container rim into the groove." Delphi says that the term means "a structure feature of an air bag cover connector that guides the connector rim into the groove." The Special Master recommends that the term be interpreted to mean "a feature of the air bag cover connector."

Because neither party objects to the Special Master's recommended interpretation, the jury will be told that "engagement member" means:

A feature of the air bag cover connector.

6. "Engagement"

Claim 11 requires that the air bag container rim be guided "into engagement with the snap-on groove during flexural displacement of the transverse panel."

Essentially repeating their arguments for "engage," PHC says that "engagement" means "contact for the purpose of connecting" while Delphi says that the term means "attachment." The Special Master recommends that the term be interpreted to mean "attachment."

The parties acknowledge that "engagement" must be interpreted the same as "engage." Therefore, because "engage" has been interpreted to mean "secure in place by snapping on," the jury will be told that "engagement" means:

Securing in place by snapping on.

IV. The '026 Patent: The Tear Seam Patent

A. The '026 Patent Generally

The ABSTRACT describes the invention of the '026 patent as follows:

A plastic air bag cover for use in an automobile, the air bag cover comprising, a front cover adapted to enclose an uninflated automotive air bag, the front cover having inner and outer surfaces defining a first thickness therebetween and a decorative indicia defined on the outer surface of the front cover and a break seam defined in the inner surface of the front cover for permitting the air bag to inflate and exit the front cover, the break seam further defining a break pattern and having a first wall, a second wall and a break wall connecting the first and second walls, the break wall having inner and outer surfaces defining a second thickness therebetween, wherein the second thickness is less than the first thickness, the break wall and first and second walls are visually imperceptible when viewing the front cover outer surface, and the break seam is substantially non-coincidental with the decorative indicia.

Figures 4 and 7 illustrate the invention:

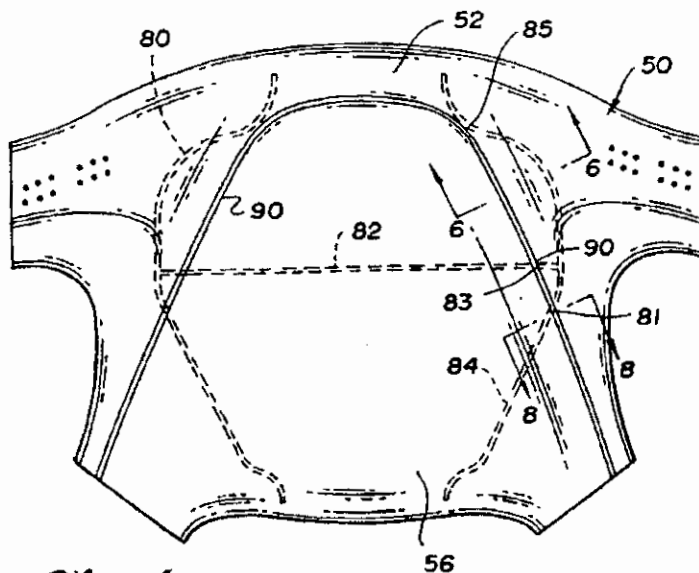


Fig. 4



Fig. 7

The BACKGROUND ART generally describes the advance in the art as follows:

Presently, when air bag covers are provided in automobiles on the driver side of the vehicle, the air bag is stored in the steering column behind an air bag cover. During automatic inflation of the air bag, the air bag cover moves away from the steering column to permit its safety function between the steering column and the operator of the vehicle.

Recent practice in the automotive industry is utilization of all plastic fabricated air bag covers. Conventional air bag covers used in conjunction with occupant restraint systems often include noticeable or visually perceptible break seams or scores disposed on the exterior surface of the air bag cover. The break seams or scores represent selected weakened surfaces where the inflating air bag initially separates or breaks through the air bag cover and moves away from the steering wheel to perform its safety feature.

Claim 1 of the '026 patent (broken down into appropriate clauses) reads:

1. A homogeneous thermoplastic air bag cover for use in an automobile, said air bag cover comprising:

a front cover adapted to enclose an uninflated automotive air bag, the front cover having inner and outer surfaces defining a first thickness therebetween; and

a break seam defined in said inner surface of said front cover for permitting the air bag to inflate and exit the front cover, said break seam further defining a break pattern and having a first convex wall, a second convex wall and a substantially planar break wall connecting said first and second walls and having a width of at least 0.3 millimeters, said break wall having inner and outer surfaces defining a second thickness therebetween, wherein said second thickness is less than said first thickness, said break pattern being visually imperceptible when viewing from the front cover outer surface.

The underlined words require interpretation by the Court. The seven terms in claim 1 to be construed are:

(1) "break seam,"

(2) "defining,"

- (3) "defined,"
- (4) "break pattern,"
- (5) "first convex wall,"
- (6) "second convex wall," and
- (7) "break wall."

B. Analysis

1. "Break Seam"

Claim 1 requires "a break seam defined in said inner surface of said front cover for permitting the air bag to inflate and exit the front cover, said break seam further defining a break pattern and having a first convex wall, a second convex wall and a substantially planar break wall."

PHC says that "break seam" means a "selected weakened zone of the airbag cover that tears to allow the inflating airbag to exit through the cover during deployment." Delphi says that the term means "a linear indentation in the air bag cover which is sufficient to ensure tearing and separation of the air bag cover on deployment of the air bag." The Special Master recommends that "break seam" be interpreted to mean "a weakened linear area."

There are two major differences between the parties' interpretations: (1) PHC calls the break seam a "weakened zone" while Delphi calls it a "linear indentation," and (2) Delphi's interpretation incorporates the concept that the break seam is sufficiently indented to guarantee tearing of the cover when the air bag inflates.

a.

The first issue is whether the “break seam” is a “weakened zone” or a “linear indentation.” The parties agree that the ordinary meaning of “break” in the context of claim 1 is “tear”—when the air bag inflates and expands, it exerts a force on the inner side of the air bag cover causing it to tear. See '026 patent, col. 3, ll. 14-19. Next, Delphi says that the ordinary meaning of “seam” is a “linear indentation,” see Random House 1726 (defining “seam” as “any line formed by abutting edges” and “any linear indentation or mark, as a wrinkle or scar”), while PHC says that the term “seam” as used in the specification means a “weakened zone.”

The specification describes the break seam and its operation:

The **break seams 24 and 26 are of reduced thickness**, to permit the air bag, as it is inflating, to exert a force at the inner portion of the front panel 12 to cause the upper and lower portions 20 and 22 of the front panel 12 to separate from the side panels 16 along the break seams 24 and to separate from each other along the break seam 26.

'026 patent, col. 3, ll. 14-19 (emphasis added). The specification also provides:

A **weakened area or break seam 60** is shown in FIGS. 4 and 5. The break seam 60 is, as discussed above, necessarily designed to allow inflation and exit of air bag 62 from the air bag cover 50 to permit its safety function between the steering column and operator (not shown). The break seam 60 is therefore designed to be the primary or sole, break area of the air bag cover during inflation and exit of the air bag 62.

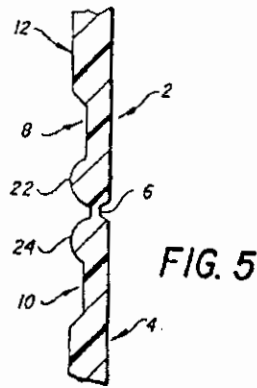
Id., col. 4, ll. 18-25 (emphasis added). The prior art visually perceptible break seams are called “selected weakened surfaces,” id., col. 1, ll. 27-30, and “score lines,” id., col. 1, ll. 35, 41, 57, 62, 67; id., col. 2, l. 1. Hence, Delphi is partially correct that the break seam is a weakened area of the inner surface of the front cover between two portions of the inner surface. At this specific location, the portions of the front cover tear apart

from each other allowing the air bag to inflate and exit the air bag cover. The term "break seam" therefore has a linear dimensional connotation, which is supported by the dictionary definitions of "seam." However, the specification does not describe the break seam as an "indentation" or a "zone." Indeed, later claim language describes the specific structure of the break seam as a substantially planar break wall between first and second convex walls. "Break seam" means a weakened linear area.

b.

Second, Delphi asserts that the meaning of "break seam" must include the concept that the break seam is sufficient to ensure tearing and separation of the air bag cover on deployment of the air bag. Delphi says that during prosecution of the '026 patent, the applicant disclaimed an inner surface break seam that is not capable of tearing the cover by itself. Therefore, "break seam" must be interpreted to include the concept of sufficiency. See Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir. 1995).

During prosecution of the '026 patent, claim 1 was rejected under 35 U.S.C. § 103 as unpatentable over U.S. Patent No. 3,819,205 to Dunford et al. in view of U.S. Patent No. 4,895,389 to Pack, Jr. The examiner found that based on these references, it would have been obvious to provide "the break seam with first and second convex walls connected by a flat break wall, as taught by Pack, Jr., because the convex walls act as a fulcrum placing additional stress on the break wall, thereby insuring that the air bag cover opens along the break seam." Figure 5 of Pack, Jr. is a cross-sectional view of the disclosed air bag cover:



The applicant responded by eliminating certain language from the claim (e.g., "said break seam is substantially non-coincidental with said decorative indicia") and arguing as follows (emphasis added):

The Pack, Jr. reference requires a "break wall 6" in the outer surface of the air bag cover to ensure separation upon air bag deployment. **The first and second convex walls 22 and 24 on the inner surface of the air bag cover are together insufficient to ensure tearing and separation of the air bag cover. Instead, the convex walls 22 and 24 act as a fulcrum by concentrating tensile forces at the outer groove 6 to assist in the tearing of the groove upon deployment of the air bag.** Again, the interior convex walls 22 and 24 are inadequate t[o] effect shearing of the cover; the shearing is piloted by the exterior groove 6. The Pack, Jr. reference therefore neither recognizes, nor solves, the underlying concern of break seams in the exposed surface of the air bag cover.

The applicant stated that unlike Dunford et al. and Pack, Jr., his invention used "hidden break seams without dependence on double-acting mechanical movements to achieve breakage and separation."¹² Delphi says that by doing so, the applicant specifically disclaimed a break seam with a double-acting mechanical arrangement.

¹²After the claim was again rejected in view of the Pack, Jr. reference, the examiner conducted an interview with the applicant and discussed Pack, Jr. and Great Britain Patent No. 2,244,449 to Zushi. The applicant then overcame the prior art by limiting claim 1 to a "homogeneous" thermoplastic air bag cover with "convex" walls and a "substantially planar" break wall.

To the extent the prosecution history confirms that the air bag must be allowed to break through the front cover at the break seam, Delphi is correct. However, that concept is already embodied in the language of the claim. Claim 1 recites that the break seam is defined in the inner surface of the front cover "for permitting the air bag to inflate and exit the front cover." The specification is consistent with the claim language. See '026 patent, col. 3, ll. 14-19 (the break seams "are of reduced thickness, to permit the air bag, as it is inflating, to exert a force" on the front panel and cause it to tear); id., col. 4, ll. 19-25 (the break seam is "necessarily designed to allow inflation and exit of air bag 62 from the air bag cover 50"). It would therefore be redundant to force the concept of sufficiency into the term "break seam" when the concept is already present in the claim. See Renishaw, 158 F.3d at 1248 ("the claim construction inquiry . . . begins and ends in all cases with the actual words of the claim").

Because claim 1 expressly provides that the break seam is "defined in said inner surface of said front cover for permitting the air bag to inflate and exit the front cover," there is no need to further interpret "break seam" to include either its location or function. The jury will be told that "break seam" means:

A weakened linear area.

2. "Defining" and "Defined"

Claim 1 requires:

a front cover adapted to enclose an uninflated automotive air bag, the front cover having inner and outer surfaces defining a first thickness therebetween; and

a break seam defined in said inner surface of said front cover for permitting the air bag to inflate and exit the front cover, said break seam further defining a break pattern and having a first convex wall, a second

convex wall and a substantially planar break wall connecting said first and second walls and having a width of at least 0.3 millimeters, said break wall having inner and outer surfaces defining a second thickness therebetween, wherein said second thickness is less than said first thickness, said break pattern being visually imperceptible when viewing from the front cover outer surface.

The underlined terms "defining" and "defined" require interpretation.

The parties propose the following interpretations:

Disputed Claim Term	PHC's Interpretation	Delphi's Interpretation	Special Master's Recommendation
defining	having or determining	having boundaries which are located at	determining
defined	located	fixing the location of	located

Again, the parties submit different dictionary definitions of "define," which must be reconciled by reference to the specification. PHC cites "to determine the essential qualities of" for "define" and "clearly outlined, characterized, or delimited" for "defined." See Webster's Third 592. Delphi cites "to determine or fix the boundaries or extent of" and "to make clear the outline or form of." See Random House 523.

The Special Master correctly recognized that while both terms come from the root "define," claim 1's "use of 'defined' has a locational connotation, that is, specifying where the break seam is located, while the claim's use of 'defining' has a determining or having boundaries connotation." The specification reflects the locational connotation of the term "defined." See '026 patent, Abstract ("a decorative indicia defined on the outer surface of the front cover"); id., col. 2, ll. 17-18 ("[a] break seam is further defined in the front cover inner surface"); id., col. 2, ll. 19-20 ("[t]he break seam includes a first wall, a second wall and a break wall defined therebetween"). The specification also reflects

the determining connotation of the term "defining." See id., col. 4, ll. 47-49 ("the break wall 68 has an inner surface 75 and an outer surface 77 defining a uniform thickness"). Hence, the Special Master's recommendations that "defined" means "located" and "defining" means "determining" are clearly supported by the specification.

Delphi says that its interpretations properly limit claim 1 to break seams that are exclusively located in the inner surface, while PHC's interpretations might be read to encompass break seams that are located in part on the inner surface and in part on the outer surface. Delphi is correct that the "break seam" that is claimed in claim 1 must be "defined" in the inner surface of the front cover—it is a weakened linear area that must be "located" in the inner surface, **not** the outer surface. PHC's argument that a "portion" of the "break seam" of claim 1 may be located in the outer surface is therefore incorrect. Importantly, though, the terms "defining" and "defined" have nothing to do with other parts of the air bag cover (including decorative indicia) that appear on the outer surface. For an air bag cover to infringe claim 1, it must have as an element a weakened linear area "located" in the inner surface of the cover. No additional interpretation is needed.

Moreover, Delphi's proffered interpretations do not make sense when read in conjunction with the surrounding claim language. For instance, if Delphi's interpretation of "defined" were used, claim 1 would read: "a break seam fixing the location of said inner surface." If Delphi's interpretation of "defining" were used, claim 1 would read: "the front cover having inner and outer surfaces having boundaries which are located at a first thickness therebetween." By contrast, the Special Master's recommended interpretations can be inserted directly into the claim in place of "defined" and "defining."

The jury will be told that "defining" means:

Determining.

The jury will be told that "defined" means:

Located.

3. "Break Pattern"

Claim 1 requires a "break seam further defining a break pattern, . . . said break pattern being visually imperceptible when viewing from the front cover outer surface."

PHC says that "break pattern" means the "shape of the tear in the airbag cover at the break seam to be caused by the airbag exiting the cover during deployment."

Delphi says that "break pattern" means "the outline of where the air bag cover tears on deployment of the air bag." The Special Master recommends that "break pattern" be interpreted to mean "the shape of the tear formed by the break seam in the front cover caused by the deployment of the air bag."

At first glance, the parties' interpretations seem very similar and really differ only in that PHC uses the term "shape" while Delphi uses "outline." Once again, the parties submit different dictionary definitions of the term "pattern" as evidence of ordinary meaning. PHC cites "an arrangement of form; disposition of parts or elements; design." See Webster's New World 1056. Delphi cites "a design or figure corresponding in outline to an object that is to be fabricated, and serving as a guide for determining its shape and dimensions." See The New Webster Encyclopedic Dictionary of the English Language 609 (1971).

The specification must be consulted to determine whether the break pattern is a "shape" or an "outline:"

Both embodiments of the present invention, air bag cover 10 illustrated in FIG. 1 and air bag cover 50 illustrated in FIG. 5 include a **break seam which is visually imperceptible** from the exposed outer surfaces of their respective front covers, 12 and 52 respectively. As shown in FIGS. 4, 6 and 7, the break seam constructed in accordance with the present invention provides an outer surface 56 of the front cover which is undisturbed by the inclusion of annular walls 70 and 72, and break wall 68. From the exterior, exposed side of the air bag cover outer surface 56, **break seam 60 is visually imperceptible** as shown by phantom lines 80, 82 and 84 in FIG. 4.

The air bag cover of the present invention therefor provides a cover which does not require any additional parts or cover-up decorating pieces to afford a clean, aesthetically pleasing outer surface. **The common, visually noticeable "U" or "H" shaped designs of the prior art are avoided with the present invention.** As such, entirely aesthetic front cover designs can be provided on air bag covers which are unrelated and unaffected by the presence of the break seam 60.

'026 patent, col. 4, l. 51-col. 5, l. 4 (emphasis added). Thus, the specification contemplates (and the parties seem to agree) that the break seam is a physical structure, while the break pattern is more abstract: the break seam is a weakened linear area in the inner surface of the front cover where the air bag cover tears, while the break pattern is a "shaped design" of that area, such as a "U" or "H" or "I"—not an "outline." Because the break seam that tears also "defines," or "determines," the break pattern, the break pattern is the "shape" of that tear.

Again, though, the real dispute between the parties goes beyond the actual words "shape" and "outline" to how each side thinks the other's interpretation might be used at the infringement stage. Here, the parties are really interpreting the entire phrase "said break pattern being visually imperceptible when viewing from the front cover outer surface"¹³ and disputing the relationship between the inner surface break

¹³Only "break pattern" has been identified for interpretation. The "visually imperceptible when viewing from the front cover outer surface" limitation has not been

seam and things that appear on the outer surface of the front cover like decorative indicia. Delphi says that because "break seam" and "break pattern" are separate limitations, the break pattern can be visible even when the inner surface break seam is not. Thus, Delphi apparently thinks that "outline" could be read to encompass lines that are drawn on the outer surface of the front cover.¹⁴ PHC, by contrast, says that highlighting the break seam location on the outside would not render the break pattern visually perceptible.

PHC is correct. Despite being separate limitations, claim 1 clearly requires a connection between the break seam and the break pattern—the break seam "defines," or "determines," the break pattern. Therefore, the two concepts cannot be completely divorced as Delphi suggests. Lines drawn on the outer surface are not defined by the break seam on the inner surface; they are independent. The '026 patent clearly contemplates "decorative indicia" or "contour lines" on the outer surface of the front cover that are not defined by the break seam in the inner surface:

For example, in FIGS. 4 and 8, the air bag cover 50 includes a decorative indicia or contour line 90. Contour line 90 is an extending groove which is molded into the air bag cover in the manufacturing process. Conventional air bag covers include different kinds of indicia including grooves, extending ribs and decorative appliques. Contour line 90 is substantially non-coincidental with the hidden break seam lines 80, 82 and 84. **As**

identified. Therefore, while the term "break pattern" must be read in light of the surrounding claim language, the "visually imperceptible" limitation must not be read into the interpretation of "break pattern." To the extent the parties argue over how much of the break pattern must be "visually imperceptible," that is a question of infringement, not claim interpretation. See Suntiger, Inc. v. Scientific Research Funding Group, 189 F.3d 1327, 1335-36 (Fed. Cir. 1999).

¹⁴Presumably, such an interpretation would allow Delphi to escape infringement by using decorative indicia lines that completely overlap the inner surface break seam because the decorative indicia would not be "visually imperceptible."

shown in FIG. 4, the contour line 90 intersects with the break seams at points 81, 83, and 85 but does not form any substantial part of the break seam. Similarly, the break seams 80, 82 and 84 do not form any part of the contour line on outer surface 56. The visual aspects of the contour line 90 are completely unaffected by the break seams 80, 82 and 84.

Id., col. 5, ll. 5-18 (emphasis added). Therefore, the break pattern is not an “outline” but rather the shape of the tear that is defined by the break seam.

The Special Master’s recommended interpretation of “break pattern” is correct.

The jury will be told that “break pattern” means:

The shape of the tear formed by the break seam in the front cover caused by the deployment of the air bag.

4. “First Convex Wall” and “Second Convex Wall”

Claim 1 recites that the break seam has “a first convex wall, a second convex wall and a substantially planar break wall connecting said first and second walls and having a width of at least 0.3 millimeters.”

PHC says that the terms mean a “first/second surface of the break seam that includes an outwardly curved shape.” Delphi says that the terms mean a “first/second continuous surface of the break seam which is outwardly curved like a circle or sphere.” The Special Master recommends that the terms be interpreted to mean a “first/second surface of the break seam that is outwardly curved.”

The dictionary definitions of “convex” offered by the parties are similar, see Webster’s Third 499 (“curved line viewed from without”); Random House 444 (“having a surface that is curved or rounded outward”), and the parties agree that the “first/second convex wall” is a “surface of the break seam.” Delphi also offers the following definition of “wall:” “any of various permanent upright constructions having a length much greater

than the thickness and presenting a **continuous** surface except where pierced by doors, windows, etc.” See Random House 2139 (emphasis added). PHC points to another definition in the same dictionary: “the outermost film or layer of structural material protecting, surrounding, and defining the physical limits of an object: the wall of a blood cell.” See id.

The essential dispute is whether the first and second convex walls must be “continuous”¹⁵ and “like a circle or sphere.”

The relevant portion of the specification merely describes the two walls as “convex,” not “continuous” or “like a circle or sphere:”

Referring to FIG. 7, the break seam 60 includes, in the preferred embodiment, a first wall 64 and a second wall 66. A break wall 68 extends between the first wall 64 and the second wall 66, a distance of at least 0.3 millimeters. The **first and second walls 64 and 66 are each convex in shape** and are disposed in a symmetrical, facing relationship with respect to the break wall 68.

More specifically, **the first wall has a convex portion 70 that extends from the inner surface 54 of the front cover 52 to the side 71 of the break wall 68.** The convex portion 70 is defined in cross section by a curve having a radius in a range from 4.0 to 11.0 millimeters. The preferred range for the radius of the convex portion 70 is between 6.0 and 9.0 millimeters.

Similarly, **the second wall 66 has a convex portion 72 that extends from the inner surface 54 of the front cover 52 to the side 73 of the break wall 68.** The convex portion 72 is defined in cross section by a curve having a radius in a range from 4.0 to 11.0 millimeters. The preferred range for the radius of the convex portion 72 is between 6.0 and 9.0 millimeters. Additionally, the break wall 68 has an inner surface 75 and an outer surface 77 defining a uniform thickness in a range from 0.2 to 0.9 millimeters, with the preferred thickness being 0.5 millimeters.

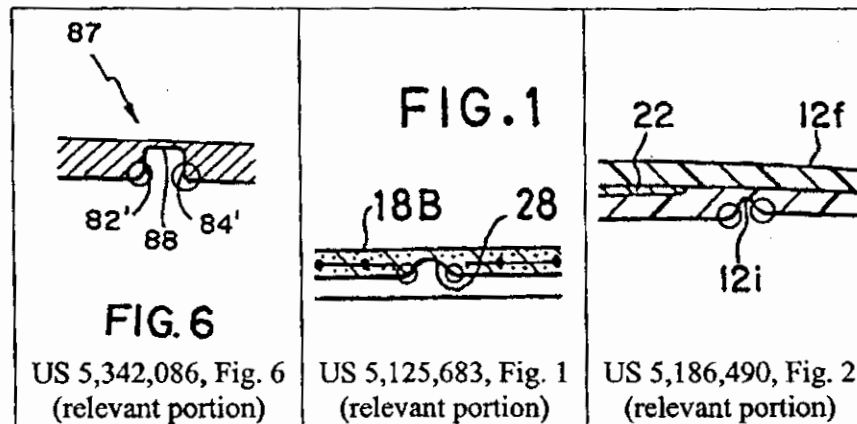
¹⁵According to PHC, Delphi is arguing for a “continuous” limitation so that air bag covers with “energy dissipating ribs molded across the break seam” will not infringe.

'026 patent, col. 4, ll. 34-50 (emphasis added). Figure 7 shows a first wall 64 with a convex portion 70 that extends all the way from the inner surface 54 to the left side 71 of the break wall 68. The convex portion 70 is defined by a curve with a uniform radius and is uninterrupted from beginning to end.

Simply because the preferred embodiment of a convex wall is "continuous" and "like a circle or sphere," however, does not mean that the claim should automatically be limited to such a structure. The ordinary meaning of "convex" is "outwardly curved." Certainly, a curve may have a uniform radius (like a circle) or it may bend from one end to the other (like a French curve or the side of a heart). Delphi has not pointed to anything in the specification to rebut the ordinary meaning and suggest that "convex wall" should be limited to curves of uniform radius. Indeed, while claim 1 does not expressly require a uniform radius for the convex walls, claim 6 requires "first and second walls . . . characterized in cross section by a curved surface having a central radius in a range from 4.0 to 11.0 millimeters." Likewise, there is nothing in the specification limiting the convex walls to "continuous" walls.

Next, the prosecution history also does not demonstrate a clear intent to limit "convex wall" to a "continuous" surface that is curved "like a circle or sphere." After claim 1 was rejected for the second time based on the Pack, Jr. reference, see supra Part IV.B.1, n.11, the applicant submitted a declaration discussing various prior art air bag covers. The applicant stated that "[n]one of the known prior art disclose a hidden tear seam having shape and dimensions sufficient to realize the design objective of the present invention." Delphi says that the applicant thereby distinguished and disclaimed walls that are convex near the inner surface and linear near the break wall, as shown in

the following figures (convex portion circled):



However, as the Special Master correctly recognized, the applicant generally distinguished the "shape" and "dimensions" of the prior art break seams; he did not expressly distinguish the invention on the basis that the convex walls were "continuous" or "like a circle or sphere." Consequently, the prosecution history does not overcome the ordinary meaning of the term.

The ordinary meaning of "first/second convex wall" applies.¹⁶ The jury will be told that "first convex wall" means:

Outwardly curved first surface of the break seam.

¹⁶At the Markman hearing, Delphi correctly pointed out that the Special Master rejected PHC's interpretation of a surface "that includes an outwardly curved shape" in favor of a surface "that is outwardly curved." Indeed, the Special Master correctly found that the "express language of Claim 1 describes the 'first wall' and 'second wall' as being 'convex' and nothing more." The claim language is simple and clearly states that the wall is "convex." It does not say that the wall "includes" a convex shape or that the wall "includes" a convex portion or that the wall is "substantially" convex. To read the claim as PHC suggests would require ignoring the ordinary meaning of "convex wall" in favor of the specification. There is no indication in the specification that the patentee intended to deviate from the ordinary meaning of the term: a "convex wall" is simply an "outwardly curved" wall. There is no need to interpret the claim further.

The jury will be told that "second convex wall" means:

Outwardly curved second surface of the break seam.

5. "Break Wall"

Claim 1 recites that the break seam has "a first convex wall, a second convex wall and a substantially planar break wall connecting said first and second walls and having a width of at least 0.3 millimeters."

PHC says that "break wall" means a "structure of reduced thickness of the airbag cover that tears to allow the inflating airbag to exit through the cover during deployment." Delphi says that the term means "a continuous surface between the first and second convex walls of the break seam which will split when the air bag deploys." The Special Master recommends that "break wall" be interpreted to mean "a surface of the break seam that tears when the air bag deploys."

The basic dispute is whether the break wall is a "structure of reduced thickness" or a "continuous" surface. Like "first/second convex wall," the parties agree that the break wall is a surface of the break seam. The relevant portions of the specification read:

Referring to FIG. 7, the break seam 60 includes, in the preferred embodiment, a first wall 64 and a second wall 66. A break wall 68 extends between the first wall 64 and the second wall 66, a distance of at least 0.3 millimeters. . . .

. . . [T]he break wall 68 has an inner surface 75 and an outer surface 77 defining a uniform thickness in a range from 0.2 to 0.9 millimeters, with the preferred thickness being 0.5 millimeters.

'026 patent, col. 4, ll. 26-50. As shown in Figure 7, the break seam of the preferred embodiment is of reduced thickness in comparison to the rest of the front cover and

continuous. See also id., col. 3, ll. 14-19 ("The break seams 24 and 26 are of reduced thickness, to permit the air bag, as it is inflating, to exert a force at the inner portion of the front panel 12 to cause the upper and lower portions 20 and 22 of the front panel 12 to separate from the side panels 16 along the break seams 24 and to separate from each other along the break seam 26."). However, like "first/second convex wall," there are no words of restriction in the specification limiting the invention to the preferred embodiment.

The Special Master's recommended interpretation of "break wall" is correct. There is no need to specify the location or thickness of the break wall because claim 1 already provides that the break wall "connect[s] said first and second [convex] walls and ha[s] a width of at least 0.3 millimeters." The jury will be told that "break wall" means:

A surface of the break seam that tears when the air bag deploys.

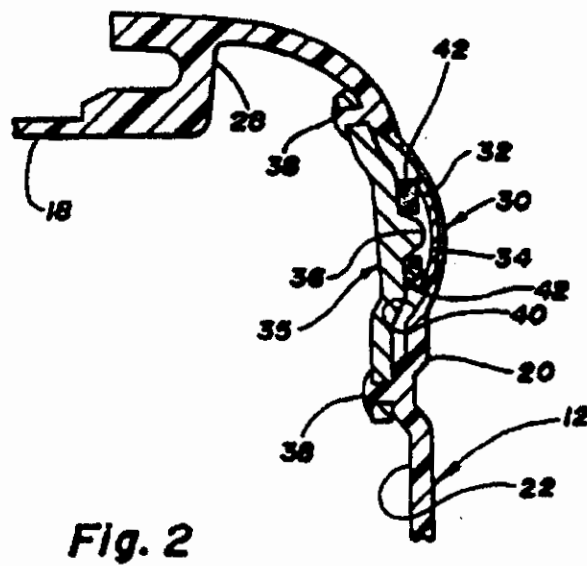
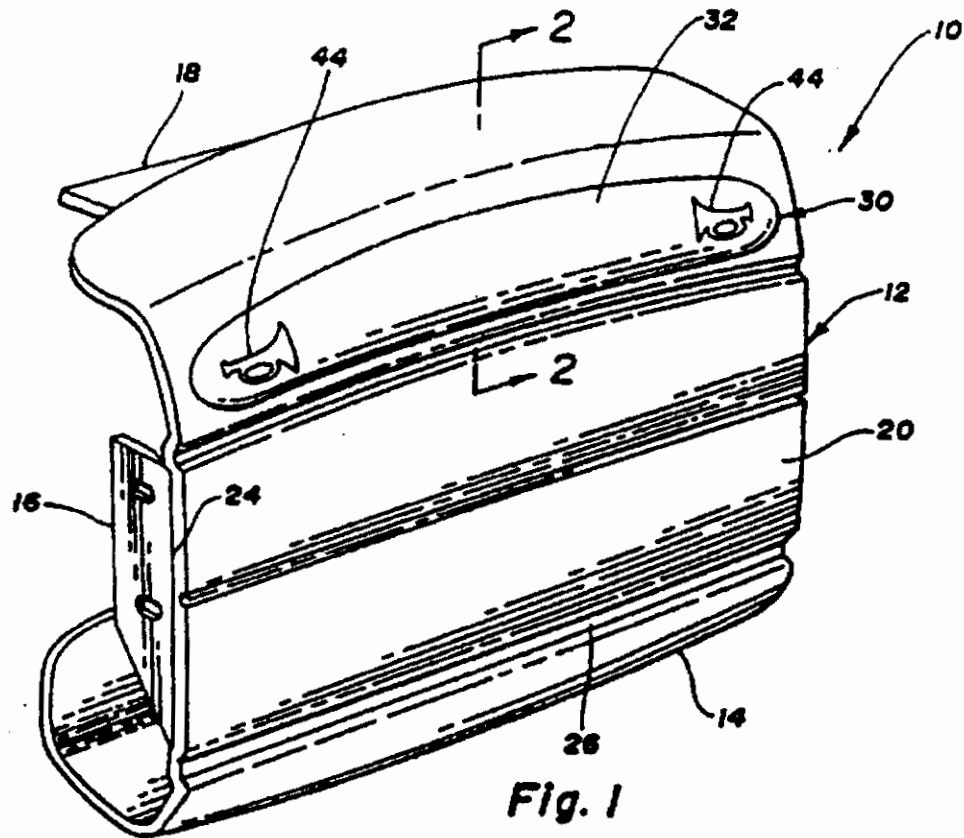
V. The '031 Patent: The Horn Switch Patent

A. The '031 Patent Generally

The ABSTRACT describes the invention of the '031 patent as follows:

An automotive air bag cover including a horn switch device incorporated therein, is provided. The air bag cover includes substantially rigid front and side panels which are adapted to enclose an uninflated automotive air bag. The front panel has inner and outer surfaces and is connected to the side panels at seams to permit the inflating air bag to leave the cover as the inflating air bag exerts a force at the inner surface of the front panel sufficient to cause the front panel to separate from the side panels along the seams. The horn switch device includes a flexible, manually operable diaphragm at the outer surface of the front panel. The diaphragm has a first electrically conductive inner surface for making a circuit with a corresponding second electrically conductive inner surface of the front panel upon manual actuation of the diaphragm.

Figures 1 and 2 illustrate the invention:



The BACKGROUND ART generally describes the advance in the art as follows:

Presently, when air bags are provided in automotive vehicles the air bag is stored in the steering column of the vehicle behind an air bag cover. During automatic inflation of the air bag, the air bag cover moves away from the steering column to permit the air bag to perform its safety function between the steering column and the operator of the vehicle.

Any manually operable horn switch or switches are typically also located on the steering wheel column on opposite sides of the air bag cover. However, these switches typically are rather small and oftentimes inaccessible for drivers who have large hands or for drivers who have limited manual dexterity.

Claim 6 of the '031 patent (broken down into appropriate clauses) reads:

6. An automotive air bag cover comprising:

plastic front and side panels adapted to enclose an uninflated automotive air bag, the front panel having inner and outer surfaces and being interconnected to the side panels at seams which permit the inflating air bag to leave the cover;

a plate fixedly secured to the inner surface of the front panel to form a hollow compartment with the front panel; and

a switch device disposed in the hollow compartment and including a first electrically conductive surface for making a circuit path with a corresponding second electrically conductive surface upon manual actuation of a portion of the front panel at its outer surface thereof and wherein, upon separation from the, side panels, the front panel including the hollow compartment, the switch device and the plate move together to permit the inflating bag to leave the cover, wherein the front panel includes a flexible diaphragm at the outer surface of the front panel for manual operation of the switch device.

The underlined words require interpretation by the Court. The two terms in claim 6 to be construed are:

(1) "disposed in," and

(2) "flexible diaphragm."

B. Analysis

1. Prosecution History of the '031 Patent

A brief review of the prosecution history of the '031 patent is necessary before addressing the parties' arguments.

While the '485 "snap-on" patent and the '026 "tear seam" patent both derived from the same original application, the '031 patent came from an entirely separate application, which ultimately issued as U.S. Patent No. 5,062,661 (the '661 patent).¹⁷ The '031 patent is a reissue of the '661 patent.

The '661 patent had one independent claim for an air bag cover comprising, among other things, "a horn switch device including a flexible manually operable diaphragm at the outer surface of the front panel." The inventor sought a reissue of the '661 patent on the basis that his invention was broader than what was originally claimed. He added new independent claim 6 and new dependent claims 7-12 to the reissue application. The new claim 7 was directed to the air bag cover of claim 6 "wherein the front panel includes a flexible diaphragm at the outer surface of the front panel for manual operation of the switch device." The examiner rejected claim 6 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,934,735 to Embach but stated that claim 7 would be allowable if rewritten in independent form. The inventor then added the "flexible diaphragm" limitation to claim 6 and the claim was allowed.

¹⁷The prosecution histories of the '485 patent and the '026 patent are therefore irrelevant to the interpretation of claims in the '031 patent. See Abbott Labs. v. Dey, L.P., 287 F.3d 1097, 1105 (Fed. Cir. 2002).

2. "Disposed In"

Claim 6 requires "a plate fixedly secured to the inner surface of the front panel to form a hollow compartment with the front panel; and a switch device disposed in the hollow compartment."

PHC says that "disposed in" means "located in." Delphi says that the phrase means "locationally forming." The Special Master recommends that "disposed in" be interpreted to mean "located in."

Beginning with the language of the claim itself, claim 6 clearly recites that the plate is fixedly secured to the inner surface of the front panel to thereby "form" a hollow compartment. Claim 6 then states that the switch device is "disposed in" that hollow compartment. Thus, as the Special Master correctly recognized, the hollow compartment is formed between the plate and the front panel, not between the switch device and the front panel. Requiring that the switch device "locationally form" the hollow compartment as Delphi suggests would change the relationship of the elements and cause the hollow compartment to be "formed" twice in the claim.

Next, the only evidence of ordinary meaning is a dictionary definition proffered by PHC. See Webster's Third 654 (defining "dispose" as "to assign to a particular place or position"). PHC is correct that the phrase "disposed in" ordinarily connotes location.

The specification does not clearly show an intent to deviate from the ordinary meaning of the phrase. The specification does not use the phrase "disposed in" but does use the phrase "disposed between" in a location sense. '031 patent, col. 2, l. 68-col.3, l. 2 ("[a] pair of spaced, elongated foam-insulators 42 are **disposed between** the plate 36 and the conductive tape 34"). Other claims also use the phrases in a similar

manner. See id., claim 5 (“at least one insulator **disposed in** the hollow compartment”); id., claim 9 (“at least one insulator **disposed between** the first and second electrically conductive inner surfaces”); id., claim 11 (“switch device **disposed in** the hollow compartment”).

Delphi says that the ordinary meaning of “disposed in” does not apply because it is inconsistent with the single embodiment disclosed in the specification. Delphi points to the following language: “The plate 36, the diaphragm 32 and the electrically conductive aluminum tape 34 define a hollow compartment 40 within the front panel 30.” Id., col. 2, ll. 66-68. While it is true that in the preferred embodiment of the invention the switch device itself forms part of the hollow compartment, the specification does not contain any language restricting the invention to such embodiments. Consequently, it would be improper to read in a limitation that the switch device “form” the hollow compartment with the front panel.

Delphi also says that if “disposed in” means “located in,” claim 6 would improperly read on removable “membrane switches,” which it says are “very thin, self-contained switches that are separate from the rear panels and inner surfaces” of air bag covers. According to Delphi, this would render claim 6 invalid under the written description and enablement requirements of 35 U.S.C. § 112 because there is no description of “membrane switches” in the specification. Claim interpretation and claim validity are separate issues, however. See Liebel-Flarsheim Co. v. Medrad, Inc., 358 F.3d 898, 911 (Fed. Cir. 2004) (“unless the court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous, the axiom regarding the construction to preserve the validity of the claim does not apply”). The

term “disposed in” can be interpreted by reference to the surrounding claim language, a dictionary definition, and the specification; there is no need to address the parties’ validity arguments. Further, the term “switch device” has not been identified for interpretation.

Finally, the prosecution history of the ‘031 patent does not overcome ordinary meaning. Delphi says that the applicant disclaimed “membrane switches” during prosecution, but the only statement it can point to is a statement from the unrelated Application No. 08/248,556 (the ‘556 application). The ‘556 application derived from the parent of the ‘485 and ‘026 patents and is completely separate from the prosecution that led to the ‘661 and ‘031 patents. Hence, the applicant’s statement in the ‘556 application distinguishing the invention of the ‘661 patent cannot affect the interpretation of terms in the ‘661 patent or the broadening reissue of the ‘031 patent. Further, the statement is not a clear disavowal of claim scope as it does not specifically relate to the meaning of “disposed in.”

The Special Master’s recommended interpretation of “disposed in” is correct. The jury will be told that “disposed in” means:

Located in.

3. “Flexible Diaphragm”

Claim 6 recites that the “front panel includes a flexible diaphragm at the outer surface of the front panel for manual operation of the switch device.”

PHC says that “flexible diaphragm” means a “pliable element included in the airbag cover’s front panel that the vehicle occupant presses/flexes to actuate the horn.” Delphi says that the phrase means a “thinned, pliable structural element included in the

air bag cover's front panel that the vehicle occupant presses/flexes to actuate the horn located in." The Special Master recommends that "flexible diaphragm" be interpreted to mean a "pliable element included in the airbag cover's front panel that the vehicle occupant presses/flexes to actuate the horn."

The parties agree that the term "flexible" means "capable of flexing" or "pliable" but submit different dictionary definitions for "diaphragm." PHC cites the following definition: "[a] membranous part that separates or divides." See Webster's II New Riverside 373. Delphi cites "a dividing membrane or thin partition especially in a tube." See Merriam-Webster Online Dictionary (2004), available at Merriam-Webster Online <<http://www.m-w.com>>. Delphi further cites the definition of "membrane" as "a thin soft pliable sheet or layer." See Webster's Third 1408. Delphi says that a "membrane" is therefore "thin" by definition.

At the Markman hearing, the parties agreed that the proper interpretation of "flexible diaphragm" is "pliable membrane." There is no need to further define the term for a jury to understand it, especially because there is nothing in the intrinsic record to indicate that the flexible diaphragm must be "thinned" in relation to some other structure:

The air bag cover 10 includes a horn switch device, generally indicated at 30, which extends substantially the entire width of the front panel 12 between the side panels 16. The horn switch device 30 includes **a flexible manually operable diaphragm 32** preferably integrally formed with the rest of the front panel 12 and the side panels 14, 16 and 18 from plastic (preferably TPO). The diaphragm 32 has a convex shape at the outer surface 20 of the front panel 12.

'031 patent, col. 2, ll. 40-48 (emphasis added).¹⁸ It would also be redundant to specify the location or function of the flexible diaphragm because the claim already states that the flexible diaphragm is "at the outer surface of the front panel for manual operation of the switch device."

The jury will be told that "flexible diaphragm" means:

Pliable membrane.

VI. Conclusion

This is a tentative decision.¹⁹ Experience in patent cases shows that subsequent proceedings and particularly trial may reveal aspects of claim interpretation not apparent at this point of the case in the papers.

¹⁸In the preferred embodiment shown in Figure 2, the plastic of the flexible diaphragm 32 is visibly thinner than the plastic of the front panel 12. However, there is nothing in the specification requiring that every embodiment be thinned. Indeed, the flexible diaphragm does not even need to be "integrally formed" of the same material as the front panel; this implies that it can be comparatively thicker or thinner. See '031 patent, col. 2, ll. 44-45 ("preferably integrally formed"); *id.*, claim 7 (claiming the air bag cover of claim 6 "wherein the diaphragm is integrally formed with the front panel").

¹⁹The Court recognizes that the rules of claim interpretation may change with the forthcoming en banc decision from the Federal Circuit in Phillips v. AWH Corp., No. 03-1269, 2004 WL 1627271 (Fed. Cir. July 21, 2004). However, there is no need to delay interpreting the claims in this case because, as always, a Markman decision is tentative. If after the Federal Circuit issues its decision in Phillips either party believes the Court's claim interpretations are incorrect, it may move to reconsider this order.

A.

The disputed terms in claim 11 of the '485 patent are interpreted as follows:

Claim Term	Claim Interpretation
homogenous thermoplastic molded body	body molded throughout of plastic material or materials which can be repeatedly softened by heating and hardened again on cooling
cover	the thing that is placed over or about the container for the air bag
panel	a particular surface of the air bag cover
segment	part
connector	a feature that connects
groove	a narrow channel
receive	accept or take in
engage	secure in place by snapping on
engagement member	a feature of the air bag cover connector
engagement	securing in place by snapping on

B.

The disputed terms in claim 1 of the '026 patent are interpreted as follows:

Claim Term	Claim Interpretation
break seam	a weakened linear area
defining	determining
defined	located
break pattern	the shape of the tear formed by the break seam in the front cover caused by the deployment of the air bag
first convex wall	outwardly curved first surface of the break seam
second convex wall	outwardly curved second surface of the break seam
break wall	a surface of the break seam that tears when the air bag deploys


C.

The disputed terms in claim 6 of the '031 patent are interpreted as follows:

Claim Term	Claim Interpretation
disposed in	located in
flexible diaphragm	pliable membrane

SO ORDERED.

Dated: **AUG 06 2004**
Detroit, Michigan


AVERN COHN
UNITED STATES DISTRICT JUDGE

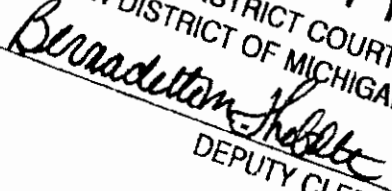
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EXHIBIT A: CLAIM 11 OF THE '485 PATENT

Disputed Claim Term	PHC's Interpretation	Delphi's Interpretation	Special Master's Recommendation	Court's Interpretation
1 connector	a feature of the airbag cover that connects the cover to an airbag container	a structural feature formed with a transverse panel which connects the cover to the air bag container	a feature that connects	a feature that connects
2 groove	feature of the airbag cover so shaped in cross sectional construction to receive and engage the rim of the airbag container	a long, narrow channel or furrow	a narrow channel	a narrow channel
3 receive	take or accept	to hold, bear or contain	accept or take in	accept or take in
4 engage	contact for the purpose of connecting	to attach or secure	attach or secure	secure in place by snapping on
5 engagement member	part of the cover that guides the container rim to the groove	a structure feature of an air bag cover connector that guides the connector rim into the groove	a feature of the air bag cover connector	a feature of the air bag cover connector
6 engagement	contact for the purpose of connecting	attachment	attachment	securing in place by snapping on

EXHIBIT B: CLAIM 1 OF THE '026 PATENT

	Disputed Claim Term	PHC's Interpretation	Delphi's Interpretation	Special Master's Recommendation	Court's Interpretation
1	break seam	selected weakened zone of the airbag cover that tears to allow the inflating airbag to exit through the cover during deployment	a linear indentation in the air bag cover which is sufficient to ensure tearing and separation of the air bag cover on deployment of the air bag	a weakened linear area	a weakened linear area
2	defining	having or determining	having boundaries which are located at	determining	determining
3	defined	located	fixing the location of	located	located
4	break pattern	shape of the tear in the airbag cover at the break seam to be caused by the airbag exiting the cover during deployment	the outline of where the air bag cover tears on deployment of the air bag	the shape of the tear formed by the break seam in the front cover caused by the deployment of the air bag	the shape of the tear formed by the break seam in the front cover caused by the deployment of the air bag
5	first convex wall	first surface of the break seam that includes an outwardly curved shape	a first continuous surface of the break seam which is outwardly curved like a circle or sphere	first surface of the break seam that is outwardly curved	outwardly curved first surface of the break seam

6	second convex wall	second surface of the break seam that includes an outwardly curved shape	a second continuous surface of the break seam which is outwardly curved like a circle or sphere	second surface of the break seam that is outwardly curved	outwardly curved second surface of the break seam
7	break wall	structure of reduced thickness of the airbag cover that tears to allow the inflating airbag to exit through the cover during deployment	a continuous surface between the first and second convex walls of the break seam which will split when the air bag deploys	a surface of the break seam that tears when the air bag deploys	a surface of the break seam that tears when the air bag deploys

EXHIBIT C: CLAIM 6 OF THE '031 PATENT

	Disputed Claim Term	PHC's Interpretation	Delphi's Interpretation	Special Master's Recommendation	Court's Interpretation
1	disposed in	located in	locationally forming	located in	located in
2	flexible diaphragm	pliable element included in the airbag cover's front panel that the vehicle occupant presses/flexes to actuate the horn	thinned, pliable structural element included in the air bag cover's front panel that the vehicle occupant presses/flexes to actuate the horn	pliable element included in the airbag cover's front panel that the vehicle occupant presses/flexes to actuate the horn	pliable membrane